MISSOURI DEPARTMENT OF NATURAL RESOURCES
DIVISION OF ENVIRONMENTAL QUALITY
LABORATORY SERVICES PROGRAM

Landfill Monitoring Report
West Lake Landfill
January 5, 1981

INTRODUCTION

The Laboratory Services Program conducted a groundwater survey at the West Lake Landfill in St. Charles County, Missouri from October 29 through October 31, 1980. The survey was done in conjunction with the Division of Geology and Land Survey. The purpose of the survey was to gather water quality information from areas of possible groundwater contamination that are not routinely sampled from the permanent monitoring wells. Sampling and field analyses were performed by Randy Crawford of the Laboratory Services Program, DEQ.

METHODS

Water samples were collected from borings that were drilled by the Division of Geology and Land Survey under the direction of Tom Dean. Borings were made to extend approximately one (1) meter below the water table using a hollow core auger. Because of the collapsible nature of the substrate, water from the borings had to be collected by lowering the sampling device down through the center of the auger. The bore holes were not bailed prior to sampling and samples were collected as soon as the drilling operation penetrated the water table.

Besides collecting samples for the normal landfill parameters, samples were also taken from borings #2, 4 and 5 for radiological analyses.

Two (2) surface samples were also collected during the survey. A grab sample was taken from the leachate pool called "Black Diamond Lake" and another grab sample was collected from the small slough at the northwest corner of the landfill along St. Charles Rock Road.

Samples were filtered or left unfiltered, depending on the particular parameters to be analyzed for, and preserved in the appropriate manner.

METHODS (Cont'd)

Specific conductivity and pH were analyzed in the field. All other samples were sent to the Department of Natural Resources Laboratory in Jefferson City, Missouri, where they were analyzed in accordance with methods outlined in EPA 600/4-79-020 Methods for Chemical Analysis of Water and Wastes.

OBSERVATIONS

Because the drilling process and sample collection took more time than anticipated only five (5) of the originally scheduled eleven (11) borings were completed. Attached is a map of the West Lake Site showing the locations of those borings in which samples were collected.

Boring #1 was drilled on the south side of the landfill approximately 150 yds. south of monitoring Well #37. We first attempted to collect a sample from the boring after the auger had been removed. When the boring caved in the decision was made to leave the auger in place and lower the bailer (sampling device) through the augers hollow core.

Boring #2 was located on the south side of the landfill about 50 yds. south of monitoring Well #37A and 150 yds. west of boring #1.

Boring #3 was drilled on the southwest corner of the landfill approximately 50 yds. southwest of monitoring Well #41. Although we did not collect water at this site for radiological testing, we did split the sample with consultants for the Nuclear Regulatory Commission who did plan on conducting radiological analyses.

Boring #4 was located on the northwest side of the landfill immediately south of the slough. Samples collected here were split with the consultants from the Nuclear Regulatory Commission.

Boring #5 was drilled on the north side of the landfill along St. Charles Rock Road. Samples from this site were also split with the Nuclear Regulatory Commission Consultants.

Water from all of the borings was extremely turbid because of disturbance caused by the drilling process.

The grab sample from "Black Diamond Lake" was collected from the platform extending into the leachate pool. The sample was black in color but clear probably indicating the presence of dissolved rather than suspended materials. The strong odor seemed typical of collection well leachate.

OBSERVATIONS (Cont'd)

Water from the slough along St. Charles Rock Road was similar in appearance to other ponds in the area. Fish (gizzard shad and carp) were seen swimming in the slough and small growths of algae (spirogyra) were present around the edge of the slough. The immediate area around the slough appeared to be used as a dump site for fill material (concrete, rock, etc.) and other trash.

RESULTS

See Attached Results

Submitted by

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Randy Crawford
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Date January 9, 1981

Approved by

James H. Long
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cc: Robert Robinson, Director, Solid Waste Management Program
Burt McCullough, Solid Waste Management Program

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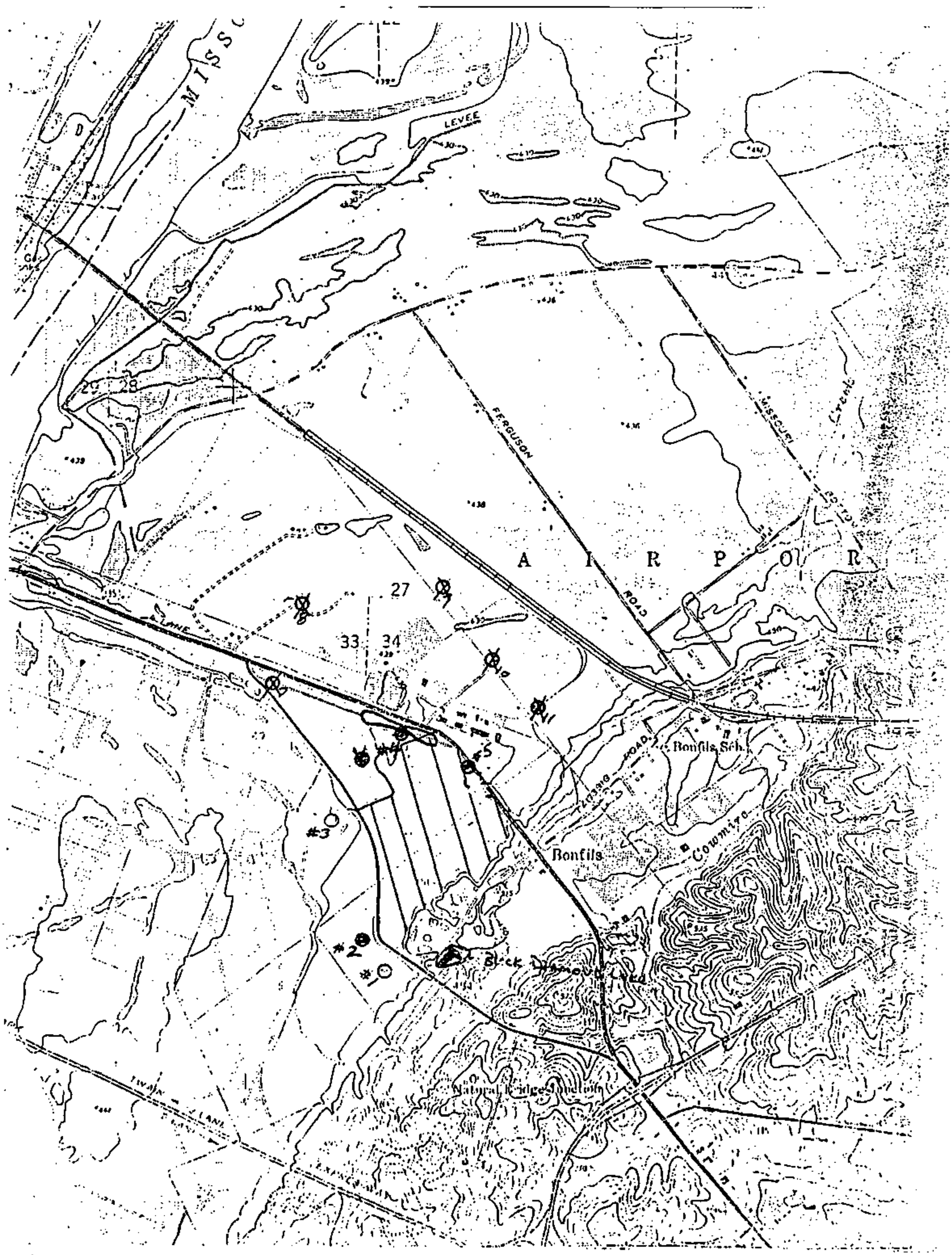
LEVEE
FERGUSON
ROAD
A I R P O R
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#5
#3
#2
Bonfils Sch.
Bonfils
Natural Bridge Junction

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REPORT OF SAMPLE ANALYSIS
LANDFILL MONITORING PROJECT

NAME OF FACILITY *West Lakes Landfill*

SAMPLES COLLECTED BY *Randy Crawford* DATE(S) *10-29-80*

NOTE:

SAMPLE DESCRIPTION	*Boring #1*	*Slough on N.W. edge (grab)*
DATE COLLECTED	*10-29-80*	*10-29-80*
SAMPLE NUMBER	*80-7125*	*80-7126*
pH Units	*6.6*	*7.5*
Specific Cond. (umhos/cm @ 25° C)	*500*	*745*
Milligrams per liter		
BOD	*16*	*< 4*
COD	*64.4*	*13.8*
NH_3 as N	*0.84*	*0.04*
NO_3+NO_2 as N	*0.54*	*0.08*
Total P	*0.21*	*0.07*
MBAS	*0.34*	*< 0.04*
Total Sulfide		
TOC	*25.8*	*< 1*
Total Cyanide		
Non-Filterable Residue (SS)	*No Result**	*9*
Filterable Residue (TDS)	*No Result**	*366*
Color	*< 25*	*< 25*
Alkalinity as $CaCO_3$		
Fluoride	*0.42*	*0.36*
Chloride	*6.5*	*57.8*
Sulfate	*79*	*56*
Hardness as $CaCO_3$ (Ca, Mg, Fe, Zn, Mn)	*370*	*244*
Potassium		
Sodium		
Calcium		
Magnesium		
Temperature		*9°C*
Micrograms per liter		
Barium, *Dissolved*	*600*	*200 Total*
Cadmium, *Dissolved*	*0.3*	*0.1 Total*
Chromium, *Dissolved*	*2*	*< 1 Total*
Copper, *Dissolved*	*3*	*< 1 Total*
Iron, *Dissolved*	*150*	*240 Total*
Lead, *Dissolved*	*2*	*2 Total*
Selenium, *Dissolved*	*2*	*< 5 Total*
Manganese, *Dissolved*	*1000*	*70 Total*
Mercury, *Dissolved*	*< 0.1*	*< 0.1 Total*
Nickel		
Zinc, *Dissolved*	*700*	*14 Total*
Arsenic, *Dissolved*	*1*	*< 5 Total*
Silver, *Dissolved*	*< 0.2*	*< 0.1 Total*

*No unfiltered sample

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REPORT OF SAMPLE ANALYSIS
LANDFILL MONITORING PROJECT

NAME OF FACILITY *West Lakes Landfill*

SAMPLES COLLECTED BY *Randy Crawford* DATE(S) *10-30-80*

NOTE:

SAMPLE DESCRIPTION	*Boring #2*	*Black Diamond Lake (grab)*
DATE COLLECTED	*10-30-80*	*10-30-80*
SAMPLE NUMBER	*80-7127*	*80-7128*
pH Units	*7.2*	*7.5*
Specific Cond. (umhos/cm @ 25° C)	*1100*	*4000*
Milligrams per liter		
BOD	*6*	*>444*
COD	*37.8*	*845*
NH_3 as N	*0.22*	*108*
NO_3+NO_2 as N	*0.98*	*< 0.05*
Total P	*0.37*	*1.0*
MBAS	*0.06*	*0.07*
Total Sulfide		
TOC	*33.0*	*302*
Total Cyanide		
Non-Filterable Residue (SS)	*15452*	*24*
Filterable Residue (TDS)	*684*	*2064*
Color	*< 25*	*1000*
Alkalinity as $CaCO_3$		
Fluoride	*0.25*	*0.54*
Chloride	*42.1*	*355*
Sulfate	*159*	*29*
Hardness as $CaCO_3$ (Ca, Mg, Fe, Zn, Mn)	*465*	*718*
Potassium		
Sodium		
Calcium		
Magnesium		
Temperature	*12°C*	*14°C*
Micrograms per liter		
Barium	*700 Dissolved*	*300 Total*
Cadmium	*1.0 Dissolved*	*0.2 Total*
Chromium	*2 Dissolved*	*12 Total*
Copper	*11 Dissolved*	*1 Total*
Iron	*400 Dissolved*	*3200 Total*
Lead	*3 Dissolved*	*< 1 Total*
Selenium	*5 Dissolved*	*< 5 Total*
Manganese	*600 Dissolved*	*500 Total*
Mercury	*< 0.1 Dissolved*	*< 0.1 Total*
Nickel		
Zinc	*1310 Dissolved*	*238 Total*
Arsenic	*2 Dissolved*	*5 Total*
Silver	*< 0.2 Dissolved*	*< 0.1 Total*

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REPORT OF SAMPLE ANALYSIS
LANDFILL MONITORING PROJECT

NAME OF FACILITY West Lake Landfill

SAMPLES COLLECTED BY Randy Crawford DATE(S) 10-30-80

NOTE:

SAMPLE DESCRIPTION	Boring #3	Boring #4	Boring #5 (Along St. Charles Rock Road)
DATE COLLECTED	10-30-80	10-30-80	10-31-80
SAMPLE NUMBER	80-7129	80-7130	80-7131
pH Units	7.0	6.7	6.7
Specific Cond. (umhos/cm @ 25° C)	1100	-	1200
Milligrams per liter			
BOD	7	17	9
COD	35.1	42.2	16.9
NH_3 as N	0.11	0.23	0.02
NO_3+NO_2 as N	0.22	0.06	0.36
Total P	0.16	0.06	0.10
MBAS	0.07	0.06	0.15
Total Sulfide			
TOC	No Result*	No Result*	No Result*
Total Cyanide			
Non-Filterable Residue (SS)	8496	7310	896
Filterable Residue (TDS)	392	2040	120
Color	< 25	< 25	< 25
Alkalinity as $CaCO_3$			
Fluoride	0.32	0.20	0.17
Chloride	16.4	10.2	14.3
Sulfate	78	37	141
Hardness as $CaCO_3$ (Ca, Mg, Fe, Zn, Mn)	585	747	577
Potassium			
Sodium			
Calcium			
Magnesium			
Temperature	15°C	15°C	18°C
Micrograms per liter			
Barium, Dissolved	500	400	200
Cadmium, Dissolved	0.8	1.3	0.9
Chromium, Dissolved	5.6	6	4
Copper, Dissolved	11	7	4
Iron, Dissolved	1200	1000	400
Lead, Dissolved	4	2	2
Selenium, Dissolved	3	< 5	< 5
Manganese, Dissolved	1100	4400	300
Mercury, Dissolved	< 0.1	< 0.1	< 0.1
Nickel			
Zinc, Dissolved	550	198	132
Arsenic, Dissolved	1	2	< 5
Silver, Dissolved	< 0.2	< 0.2	< 0.2

*Instrument Failure

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